

Lichens of the Garden of the Institute for Nature Study, National Science Museum, Shioganedai, Tokyo

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Fieldwork in The Garden of the Institute for Nature Study, Shioganedai, Tokyo was carried out on May 18 1999. A total of 21 lichen species were collected, including one foliose species (*Physciella melanchra*) and 20 crustose species. This indicates a rich lichen flora, in spite of the garden being located in western Tokyo. The majority of the Institute for Nature Study is covered by oldgrowth, evergreen deciduous forest. *Bacidina chlorotricula* is reported as new to Japan. Six species are undetermined and denoted only to genus. Short morphological descriptions based on the collected material are provided, as well as notes on distribution, habitat and other characteristics.

Key words: *Bacidina chlorotricula*, flora, Japan, lichens.

As part of a biological investigation of The Garden of the Institute for Nature Study, Shioganedai, Tokyo (former Shirokane Imperial Estate), H. Kashiwadani, K.-H. Moon and G. Thor were permitted to collect lichens here on May 18 1999. The area is located in western Tokyo 300 m, NE of the Meguro railway station along the Yamanote Line and 6 km SSW of the Imperial Palace. The area is therefore affected by air pollution. There is no earlier lichen investigation of the area. For an introduction to the climate in Tokyo (see Kashiwadani and Thor 1997).

The area of The Institute for Nature Study is about 200,000 m², and is mostly covered by temperate evergreen deciduous forest. Two ponds, one larger than the other, are present. The Garden is bounded to the west by the Shuto Expressway No. 2, and in the south by the Metropolitan Guesthouse and the Metropolitan Teien art Museum, both

located within a park.

Material and Methods

The brief morphological descriptions provided here are based only on the collections from The Garden of the Institute for Nature Study and/or from the Imperial Palace (Kashiwadani and Thor 2000). Measurements, given in mm, were made in the dissecting microscope. Light microscopy measurements were made with an oil-immersion lens on water mounts, achieving a precision of 1 µm. Only spores lying outside the asci were measured; obviously abnormal spores were excluded. The measurement values represent the extreme range. Thin layer chromatography (TLC) was carried out in accordance with the method described by White and James (1985). Only the B system (HEF) was used. For species tested by TLC, all collections have been checked if not otherwise

stated. The collections are deposited only in herbarium TNS, except a few duplicates in herbarium UPS.

The locality is: Honshu, Province of Musashi (Tokyo-to = Tokyo Metropolis), Garden of the Institute for Nature Study, National Science Museum, Shiroganedai, Minato-ku, 35°38'N, 139°43.5'E, elevation about 30 m.

Results

Biodiversity

A total of 25 species were collected, including 24 crustose species and one foliose species, *Physciella melanchra*. Fifteen of the species are determined to species level, of which *Bacidina chlorotricula* is reported as new to Japan. The specimens still not determined to species level are here denoted only with genus (six species) or as Lichen sp. (four species; not included). The most frequently observed species within the Institute for Nature Study were *Bacidina chlorotricula*, *Caloplaca* sp., *Dimerella pineti*, *Lecanora pulverulenta*, *Lepraria* sp. No. 1, *Lepraria* sp. No. 4, *Lepraria* sp. No. 6 and *Physciella melanchra*. Most other species were only found within a small area.

In a recent inventory of the Imperial Palace in Tokyo (Kashiwadani and Thor 2000), 57 species were reported, six of which were reported as new to Japan. Twelve species found within the Garden of the Institute for Nature Study were not observed within the Imperial Palace, viz. *Anisomeridium polypori*, *Dimerella pineti*, *Endocarpon petrolepideum*, *Graphis handelii*, *Lepraria* sp. No. 6, *Micarea prasina*, *Porina* sp., *Scoliciosporum chlorococcum* and the four undetermined species. This means that a total of 68 species have been reported in these two inventories (*Bacidina chlorotricula* was reported from the Imperial Palace as Lichen sp. No. 1). This indicates a rich lichen flora of Tokyo, in spite of air pollution. However, the low number of foliose

species found, e. g., the absence of the genus *Parmotrema*, strongly indicates that the lichen flora is severely affected by air pollution. The difference in species composition between the two inventoried areas can probably partly be explained by the fact that several hundred years old lichen rich stonewalls were found within the Imperial Palace (Kashiwadani and Thor 2000), whereas rocks are rare within The Garden of the Institute for Nature Study. This area is instead dominated by a temperate evergreen deciduous forest.

Lichen habitats

Temperate evergreen deciduous forests—The forests may be classified as oldgrowth, containing some dead wood (snags, logs, stumps), a substrate scarce in rationally managed forests. Forests with a long environmental continuity are at present very rare in the Musashino plain, where Tokyo is located. Commonly occurring trees include *Acer buergerianum*, *A. cissifolium*, *A. diabolicum*, *A. palmatum*, *Alnus japonica*, *Aphananthe aspera*, *Castanopsis sieboldii*, *Juglans mandschurica* var. *cordiformis*, *Phellodendron amurense*, *Prunus* × *yedoensis*, *Prunus* spp., *Quercus myrsinaefolia*, *Q. serrata*, *Q. sessiliflora* and *Zelkova serrata*. Wood within the forest usually had no lichens, but on one log in a dense forest *Dimerella pineti*, *Micarea prasina* and *Placynthiella icmalea* were present. Forest edges were most species rich at the two ponds where, e. g., *Graphis handelii*, *Lecanora japonica*, *Lecanora pulverulenta*, *Physciella melanchra* and *Scoliciosporum chlorococcum* were found on trees. Other species; *Bacidina chlorotricula* and *Lepraria* spp., were present both in open and dense forests.

Coniferous trees—Scattered coniferous trees are present. *Pinus thunbergii* trees occur on drier, nutrient-poor soils. One large individual of about 300 years old harboured

Anisomeridium polypori, *Dimerella pineti* and *Lepraria* sp. No. 1. Otherwise *Pinus thunbergii* housed few species. Other coniferous trees present include *Chamaecyparis* sp., on which *Dimerella pineti* was collected.

Rocks—Few and small rocks were occasionally present, especially along small streams in forests. Only *Lepraria* sp. No. 1 was found on these rocks.

Stonewalls made from a soft, alkaline rock formed by volcanic ash—A few metres from the small pond *Endocarpon japonicum*, *Trapelia coarctata*, *T. placodioides* and *Verrucaria* sp. were found on a stonewall.

Mortar—Walls made of, or containing mortar, to a large extent surround the garden. *Caloplaca* sp. was common, as on mortar in all Tokyo.

The species

In the following systematic account, genera and species are arranged alphabetically. Since diagnostic features of the taxa are usually obvious from morphological descriptions in other publications, no lengthy descriptions are provided. Nevertheless, most taxa are compared to similar and related species. The enumeration of the *Lepraria* species follows Kashiwadani and Thor (2000), but since *Lepraria* sp. No. 2, No. 3 and No. 5 were not found in The Garden of the Institute for Nature Study, they are not included here. For notes on distribution and habitat of species also found within the Imperial Palace, the reader is referred to Kashiwadani and Thor (2000).

1. *Agonimia pacifica* (H. Harada) Diederich

Thallus minutely squamulose; squamules up to $0.1\text{--}1.0 \times 0.1\text{--}0.3$ mm, crowded, erect, brownish green. Perithecia not seen. Chemistry: nil.

Note: The species was found on *Aphananthe aspera* in semi-open forest intermixed with *Physciella melanchra*.

Specimen examined: Thor 16563.

2. *Anisomeridium polypori* (Ellis & Everh.) M. E. Barr

Thallus greyish green. Perithecia up to 0.2 mm in diameter, black; paraphyses persistent, branched, spores 1-septate, c. 15×5 μm . Pycnidia with macroconidia ($4\text{--}5 \times 2$ μm) or with microconidia ($2\text{--}3 \times 1$ μm). Photobiont *Trentepohlia*.

Note: *Anisomeridium polypori* was found only with macroconidia (16602) or with perithecia and microconidia (16562). *Anisomeridium polypori* was collected in semi-open to dense forests. For a thorough morphological description of Japanese material, (see Kashiwadani and Thor 1995). *Anisomeridium polypori* (as *A. nyssaegenum*) is reported twice from Japan; from one locality in Honshu by Kashiwadani and Thor (1995), and from two localities in Hokkaido by Ohmura and Kashiwadani (1997). However, the collections from Hokkaido most probably do not belong to *A. polypori*. These specimens have a large, whitish thallus and perithecia up to 0.5 mm in diameter.

Specimens examined: Thor 16562 (on *Aphananthe aspera*) (dupl. UPS), Thor 16602 (on a c. 300 year old *Pinus densiflora*).

3. *Bacidina chlorotricula* (Nyl.) Vězda & Poelt

Thallus partly diffusely dissolving into pale green, loosely aggregated goniocysts, or when with apothecia of minute dark green granules (except 16566, 16585 which has both goniocysts and apothecia), UV - . Apothecia pale grey with persistent margin of the same colour as the disc, up to 0.3 mm in diameter; exiple of hyphae with globose lumina, $4\text{--}6$ μm in diameter; hypothecium colourless; hymenium $40\text{--}45$ μm high; epithecium without crystals, K-. Spores $0\text{--}2$ ($\text{--}6$)-septate, $21\text{--}36 \times 1\text{--}2$ μm . Pycnidia pale, up to 0.1 mm in diameter; conidia filiform, curved and $35\text{--}40 \times 1$ μm .

Note: *Bacidina chlorotricula* is a distinct species with its pale grey apothecia with

persistent margin. Based on the morphological description (Ekman 1996), Lichen sp. No. 1 reported from the Imperial Palace by Kashiwadani and Thor (2000) is most certainly *Bacidina chlorotricula* (without apothecia). The species referred to as Lichen sp. No. 2 in Kashiwadani and Thor (2000) might also belong to *Bacidina chlorotricula*, or at least to *Bacidina*.

Habitat: The species was common, occurring on deciduous trees and once on a ca. 0.5 m high stonewall near a wooden shelter by the large pond.

Distribution: It is earlier reported from Europe and North America (Ekman 1996). New to Japan and Asia.

Specimens examined: Kashiwadani 41793 (on *Aphananthe aspera*) (thallus dissolved in goniocysts, no ap.), Kashiwadani 41794 (on *Juglans mandschurica* var. *cordiformis*) (thallus dissolved in goniocysts, no ap.), Kashiwadani 41798 (on *Castanopsis sieboldii*) (thallus not dissolved in goniocysts, c. ap.), Thor 16564 (on *Aphananthe aspera*) (thallus dissolved in goniocysts, no ap.) (dupl. UPS), Thor 16566 (thallus dissolved in goniocysts, ca. 2 ap.), Thor 16567 (on *Juglans mandschurica* var. *cordiformis*) (thallus dissolved in goniocysts, no ap.) (dupl. in herb. UPS), Thor 16569 (on *Quercus sessiliflora*) (thallus dissolved in goniocysts, no ap.) (dupl. in herb. UPS), Thor 16574 (on *Phellodendron amurense*) (thallus dissolved in goniocysts, no ap.), Thor 16582 (on *Acer buergerianum*) (thallus not dissolved in goniocysts, c. ap.), Thor 16584 (on *Castanopsis sieboldii*) (thallus not dissolved in goniocysts, c. ap.), Thor 16585 (on *Castanopsis sieboldii*) (thallus dissolved in goniocysts, c. ap.) (dupl. in herb. UPS), Thor 16586 (on *Castanopsis sieboldii*) (thallus not dissolved in goniocysts, c. ap.) (dupl. UPS), Thor 16593 (on *Castanopsis sieboldii*) (thallus dissolved in goniocysts, no ap.), Thor 16612 (on a ca. 0.5 m high stonewall near a wooden shelter by the large pond) (thallus not dissolved in goniocysts, c. ap.) (dupl. UPS).

4. *Caloplaca* sp.

Thallus crustose, of contiguous areoles to squamulose, not forming rosettes, yellow to orange, not pruinose; squamules up to 1 mm wide. Apothecia up to 1 mm in diameter, slightly constricted at base, superficial from

the first, concolorous with the thallus; exiple conspicuous, yellow orange; disc more or less flat from the beginning, becoming slightly convex, orange; hymenium 65–75 μm tall; paraphyses moniliform in the upper part; asci 8-spored. Spores ellipsoid, not lemon-shaped, 10–14 \times 5–8 μm , septum 2–4 μm wide.

Note: Fertile specimens of *Caloplaca* sp. were not collected, and the description is based on material collected within the Imperial Palace (Kashiwadani and Thor 2000). *Caloplaca* sp. was common on mortar on the walls surrounding the garden. The species is frequently observed on mortar, asphalt etc. in Tokyo.

Specimens examined: Honshu, Musashi Prov. (Tokyo Metropolis), Chiyoda-ku, the Imperial Palace, on mortar, alt. 8–26 m, February 22, 1996, G. Thor 14996 (TNS); the same locality, G. Thor 14982.

5. *Dimerella pineti* (Ach.) Vězda

Thallus thin, greyish green. Apothecia pale, up to 0.3 mm in diameter, constricted at base; disc concave to flat, whitish to dull yellow; paraphyses 1–2 μm wide, the apical cells up to 4 μm wide. Spores 9–12 \times 3–4 μm . Pycnidia pale dull; conidia 5–8 \times 2–3 μm , oblong, biguttulate, with a clear median constriction. Photobiont *Trentepohlia*. Chemistry: Nil (41782).

Note: *Dimerella pineti* was found at bases of deciduous and coniferous trees in dense forests, but also on a log of a deciduous tree (intermixed with *Micarea prasina* and *Placynthiella icmalea*).

Specimens examined: Kashiwadani 41782 (on *Chamaecyparis* sp.), Kashiwadani 41785 (on old *Pinus densiflora*), Kashiwadani 41799 (on log of a deciduous tree), Thor 16572 (on *Chamaecyparis* sp.), Thor 16589 (on *Castanopsis* sp.), Thor 16604 (on c. 300 year old *Pinus densiflora*).

6. *Endocarpon japonicum* H. Harada

Thallus lower surface lacking rhizines, black; squamules lobate, adnate. Spores two per ascus, muriform, colourless to pale

brown, ca. $30 \times 15 \mu\text{m}$. Photobiont cells in the hymenium globose, 3–4 μm in diameter.

Note: *Endocarpon japonicum* is distinguished by the adnate squamules and the black lower thallus surface. It was found on a stonewall a few metre from the small pond, intermixed with *Endocarpon petrolepideum*, *Trapelia coarctata*, *T. placodioides* and *Verrucaria* sp.

Specimen examined: Kashiwadani 41787.

7. *Endocarpon petrolepideum* (Nyl.) Nyl. ex Hue

Thallus lower surface lacking rhizines, black; squamules not lobate, adnate. Spores two per ascus, muriform, colourless to pale brown, ca. $30 \times 15 \mu\text{m}$. Photobiont cells in the hymenium globose, 2–3 μm in diameter.

Note: *Endocarpon petrolepideum* is separated from *E. japonicum* by the non-lobulate squamules. It was found on a stonewall and on concrete.

Specimen examined: Thor 16616 (in collection of *Trapelia placodioides*), Kashiwadani 41788.

8. *Graphis handelii* Zahlbr.

Thallus whitish. Apothecia branched or unbranched, black, not pruinose, the sides not furrowed. Spores 8–9-septate, $30\text{--}33 \times 8\text{--}9 \mu\text{m}$. Chemistry: Norstictic acid.

Note: *Graphis handelii* is somewhat similar to *G. scripta*, which, however, lacks norstictic acid. *G. handelii* was a rare species in the present area, found on two deciduous trees in glades near the large pond.

Specimens examined: Kashiwadani 41776 (on *Acer cissifolium*), Kashiwadani 41781 (on *Prunus yedoensis*).

9. *Lecanora japonica* Müll. Arg.

Thallus thin, whitish grey, up to 1 cm in diameter, K + yellow, PD–. Apothecia up to 0.5 mm in diameter, initially with a thin pale margin, which subsequently shrinks and darkens or vanishes completely; base constricted; disc red-brown, more or less flat,

not pruinose; hymenium ca. 60 μm tall; epithecium reddish brown, without crystals, containing a gelatinous substance not soluble in K; asci 16-spored. Spores colourless, not septate, $8\text{--}9 \times 4\text{--}5 \mu\text{m}$. Pycnidia not seen.

Note: *Lecanora japonica* belongs to the *Lecanora subfusca*-group. It is distinguished by the red-brown disc and the 16-spored asci. It was collected on *Prunus* sp. at the shore of the large pond. The species is reported to have atranorin (Miyawaki 1988).

Specimen examined: Thor 16595.

10. *Lecanora pulverulenta* Müll. Arg.

Thallus granular, pale greenish, C–, hyphae 2–4 μm wide. Apothecia present (16596, 41780) or absent (16571), up to 1 mm in diameter; disc flat to slightly convex, yellowish grey. Pycnidia not seen. Photobiont *Chlorococcales*, cells 8–15 μm in diameter. Chemistry: Usnic acid, zeorin and unknown substance rf 3 (yellow, UV + yellow).

Note: *Lecanora pulverulenta* is distinguished by the granular thallus, and by its chemistry. It was found on deciduous trees in glades by the large pond.

Specimens examined: Kashiwadani 41780 (on *Prunus* sp.), Thor 16571 (on *Quercus sessiliflora*) (dupl. in UPS), Thor 16596 (on *Prunus* sp.).

11. *Lepraria* sp. No. 1

Thallus consisting of a mass of powdery cottony spherical granules, up to 120 μm in diameter, forming rosettes up to 20 mm in diameter or irregular patches, with or without marginal lobes, grey to greenish grey, with some short projecting hyphae, C–, K \pm yellow, PD + orange; medulla not differentiated; hyphae 2–5 μm in diameter; hypothallus absent. Photobiont cells 6–15 μm in diameter. Chemistry: Atranorin, zeorin and stictic acid complex.

Note: *Lepraria* sp. No. 1 is similar to *L. lobificans* (found within the Imperial Palace; Kashiwadani and Thor 2000), but this

species has a bluish thallus colour, a whitish medulla and a denser thallus. The species was common in open habitats to dense forests on deciduous and coniferous trees as well as on shaded rocks.

Specimens examined: Kashiwadani 41783 (on *Castanopsis sieboldii*), Kashiwadani 41786 (on old *Pinus densiflora*), Kashiwadani 41790 (on *Quercus serrata*), Kashiwadani 41792 (on shaded rock), Thor 16578 (on *Quercus serrata*) (dupl. UPS), Thor 16591 (on *Castanopsis* sp.), Thor 16601 (on 300 years old *Pinus densiflora*), Thor 16614 (on shaded rock), Thor 16615 (on shaded rock) (dupl. UPS).

12. *Lepraria* sp. No. 4

Thallus consisting of a mass of powdery spherical granules, up to 110 µm in diameter, forming often confluent rosettes to almost irregular patches, up to 1 cm in diameter, with or without marginal lobes, bluish pale grey, with few long projecting hyphae; medulla not differentiated or thin and whitish, C + red, K + yellow, PD + yellow; hyphae 3–5 µm in diameter; hypothallus distinct to absent, brownish black or at thallus margins whitish. Photobiont cells 6–14 µm in diameter. Chemistry: Zeorin, lecanoric acid and atranorin.

Note: *Lepraria* sp. No. 4 is distinguished by the combination of a bluish thallus tint, the often distinct thallus rosettes, and by the chemistry. The species was common on deciduous trees in dense to open forests.

Specimens examined: Kashiwadani 41791 (on *Quercus serrata*), Kashiwadani 41779 (on *Prunus* sp.), Thor 16570 (on *Quercus sessiliflora*), Thor 16577 (on *Quercus serrata*) (dupl. UPS), Thor 16590 (on *Castanopsis* sp.) (dupl. UPS), Thor 16597 (on *Prunus* sp.).

13. *Lepraria* sp. No. 6

Thallus consisting of a mass of powdery spherical granules, up to 70 µm in diameter, forming irregular patches, without marginal lobes, greenish grey, short projecting hyphae present; medulla not differentiated, C⁻, K⁻, PD⁻; hyphae 2–5 µm in diameter; hypothal-

lus absent. Photobiont cells 6–12 µm in diameter. Chemistry: Usnic acid and zeorin.

Note: *Lepraria* sp. No. 6 is distinguished by the addressed, greenish grey thalli forming irregular patches, and by its chemistry. It is easily overlooked because of the small, thin and greenish grey thalli. It was common on deciduous trees in semi-open habitats. *Lepraria* sp. No. 2, reported from the Imperial Palace (Kashiwadani and Thor 2000), has the same chemistry. The species from The Garden of the Institute for Nature Study differs by, e. g., the typically larger granules, a darker thallus colour, the presence of short projecting hyphae, and by the corticolous habitat.

Specimens examined: Kashiwadani 41795 (on *Zelkova serrata*) (dupl. UPS), Thor 16576 (on *Quercus serrata*), Thor 16583 (on *Acer buergerianum*), Thor 16594 (on *Quercus myrsinaefolia*), Thor 16605 (on *Zelkova serrata*).

14. *Micarea prasina* Fr.

Thallus composed of ±globose goniocysts. Apothecia not seen. Pycnidia pale, sessile; microconidia 5–7 × 1 µm. Photobiont cells 5–9 µm in diameter. Chemistry: Methyloxymicareic acid.

Note: The collection is referred to *Micarea prasina* in spite of lacking apothecia and having slightly larger photobiont cells than what is usual (Coppins 1983). However, the ±globose goniocysts and the presence of methyloxymicareic acid strongly indicate that it is *M. prasina*. It was found on a log of a large, deciduous tree in a dense forest intermixed with *Dimerella pineti* and *Placynthiella icmalea*. The species was published as new to Japan (Kyushu) by Kashiwadani et al. (1998).

Specimen examined: Thor 16609 (dupl. UPS).

15. *Physciella melanchra* (Hue) Essl.

Thallus foliose, greenish grey; soralia 0.5–1 mm in diameter; medulla whitish.

Note: *Physciella melanchra* is recognised

by being foliose with small, sorediate thalli. The species was common on various deciduous trees in semi-open to open habitats.

Specimens examined: Kashiwadani 41778 (on *Acer diabolicum*), Kashiwadani 41784 (on *Phellodendron amurense*), Thor 16565 (on *Aphananthe aspera*), Thor 16575 (on *Phellodendron amurense*), Thor 16581 (on *Acer buergerianum*) (dupl. UPS), Thor 16606 (on *Zelkova serrata*).

16. *Placynthiella icmalea* (Ach.) Coppins & P. James

Thallus consisting of isidiate to minutely coralloid granules; granules greenish brown, C + red, K-, PD-. Apothecia up to 0.5 mm in diameter; true exiple persistent, disc flat to slightly convex. Spores $8-11 \times 4-5 \mu\text{m}$. Chemistry: Gyrophoric acid.

Note: *Placynthiella icmalea* was found on a log of a large, deciduous tree in dense forest. It was intermixed with *Dimerella pineti* and *Micarea prasina*. The species was reported also from the Imperial Palace (Kashiwadani and Thor 2000), but no apothecia were found on those specimens.

Specimen examined: Thor 16610.

17. *Porina* sp.

Thallus greenish dark grey, smooth, thin. Perithecia black, with a thin, green thallus cover except in the uppermost part, not constricted at the base, subglobose, up to 0.5 mm in diameter. Spores colourless, 5-septate, ca. $30 \times 5 \mu\text{m}$. Photobiont *Trentepohlia*.

Note: *Porina* sp. was found once on *Acer palmatum*. It is similar to *Porina* sp. No. 1 reported from the Imperial palace (Kashiwadani and Thor 2000). However, this specimen had smaller perithecia (0.2–0.3 mm in diameter) and was saxicolous. Owing to the limited material, a definite decision concerning its taxonomic status could not be made.

Specimen examined: Kashiwadani 41777.

18. *Scoliciosporum chlorococcum* (Stenh.) Vězda

Thallus thin, green. Apothecium (only one observed) brownish black, shiny; epihymenium dirty bluish. Spores elongate to spindle-shaped, straight or occasionally spirally twisted, 6–8-septate, $33-35 \times 4-5 \mu\text{m}$.

Note: Only one apothecium of *Scoliciosporum chlorococcum* was found on *Prunus* sp. at the shore of the large pond. Some spores are spirally twisted and therefore resembling spores of, e. g., *Scoliciosporum umbrinum*, but that species has thinner spores. *Scoliciosporum chlorococcum* was reported as new to Japan by Kashiwadani and Thor (1995).

Specimen examined: Thor 16595 (in collection of *Lecanora japonica*).

19. *Trapelia coarctata* (Sm.) M. Choisy

Thallus pale grey, cracked, C + pale red; soralia not seen. Apothecia at first globose and appearing perithecia-like, then splitting at apex and margin appearing \pm lobed, up to 0.4 mm in diameter, reddish brown. Spores eight per ascus, ca. $18 \times 10 \mu\text{m}$. Chemistry: Gyrophoric acid.

Note: A few thalli of *Trapelia coarctata* were found on a stonewall by the small pond. The species was intermixed with *Endocarpon japonicum*, *Trapelia placodioides* and *Verrucaria* sp.

Specimen examined: Kashiwadani 41788.

20. *Trapelia placodioides* Coppins & P. James

Thallus forming small, delimited patches, thin, pale grey, C + pale red; soralia numerous, up to 0.4 mm in diameter, yellowish white. Apothecia not seen. Chemistry: Gyrophoric acid.

Note: Differs from *Trapelia coarctata* by possessing soralia. *Trapelia placodioides* was found on a stonewall a few metres from the small pond. It was intermixed with *Endocarpon japonicum*, *Trapelia coarctata*

and *Verrucaria* sp.

Specimen examined: Thor 16616 (dupl. UPS).

21. *Verrucaria* sp.

Thallus distinctly superficial, dark greenish grey, cracked, dull, up to 0.2 mm thick; prothallus absent. Perithecia simple, half-immersed to almost immersed, black, up to 0.2 mm in diameter; asci 8-spored. Spores ellipsoid, $15-19 \times 9-12 \mu\text{m}$.

Note: *Verrucaria* sp. was found on a stonewall a few metres from the small pond. It was intermixed with *Endocarpon japonicum*, *Trapelia coarctata* and *T. placodioides*. The species was also found in the Imperial Palace (as *Verrucaria* sp. No. 1; Kashiwadani and Thor 2000).

Specimens examined: Kashiwadani 41796, Thor 16620 (dupl. UPS).

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G. トール^a, 柏谷博之^b, 文 光喜^c: 国立科学博物館附属自然教育園 (東京都白金台) の地衣類

1999年5月に実施した現地調査に基づき, 東京都白金台にある国立科学博物館附属自然教育園内に生育する地衣類21種を報告し, 各種について分類学的な所見を付した. このうち, 20種は固着地衣類で葉状地衣類としてはムカデゴケ科の *Physciella melanchra* ただ一種が確認された. *Bacidina chlorotricula* は欧州, 北米に分布することが知られているが日本からは初めての報告である.

植物園は東京の市街地に位置するが, シイ, カシ等の古木が現存することが比較的豊富な地衣類相を維持していると考えられる. レブラゴケ属など6種については種名の同定ができないため属名と主要な特徴だけを記した.

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